SPECTROCHIMICA ACTA
PART B: ATOMIC SPECTROSCOPY

CONTENTS OF VOLUME 45B 1990

No. 1/2

In this issue:

Tutorial Review

J. A. M. van der Mullen 1 On the atomic state distribution function in inductively coupled plasmas—II. The stage of local thermal equilibrium and its validity region

A. Obrebski, J. Lawrenz and K. Niemax 15 *Topics in Laser Spectroscopy:* On the potential and limitations of spectroscopic isotope ratio measurements by resonant Doppler-free two-photon laser enhanced ionization spectroscopy

E. B. Saloman 37 *Topics in Laser Spectroscopy:* A resonance ionization spectroscopy/resonance ionization mass spectrometry data service. I—Data sheets for As, B, Cd, C, Ge, Au, Fe, Pb, Si and Zn

V. Karanassios and G. Horlick 85 A computer-controlled direct sample insertion device for inductively coupled plasma–atomic emission spectrometry

V. Karanassios, G. Horlick and M. Abdullah 105 Characterization of a direct sample insertion device for inductively coupled plasma–atomic emission spectrometry

V. Karanassios, M. Abdullah and G. Horlick 119 The application of chemical modification in direct sample insertion–inductively coupled plasma–atomic emission spectrometry

E. Beinrohr 131 A comparison of discrete and continuous sample introduction for flame atomic absorption spectrometry

L. L. Burton and M. W. Blades 139 A simple method for calculating deviations from local thermodynamic equilibrium in the inductively coupled plasma

Keling Liu, N. Kovacic and R. M. Barnes 145 High-power oxygen inductively coupled plasma discharge for spectrochemical analysis

Pengyuan Yang and R. M. Barnes 157 A low-power oxygen inductively coupled plasma for spectrochemical analysis—III. Excitation mechanism

Pengyuan Yang and R. M. Barnes 167 A low-power oxygen inductively coupled plasma for spectrochemical analysis—IV. Analytical features

J.-P. François and F. Janssens 177 Determination of the centroid and sigma values of the central Gaussian part of a spectral line and their use for detection of spectral interference

Runzhong Peng, J. J. Tiggelman and M. T. C. de Loos-Vollebregt 189 Analytical performance of a thermospray sample introduction system for inductively coupled plasma atomic emission spectrometry

Instrument Column

J. A. C. Broekaert 201 Emission spectrometric instrumentation

H. Matusiewicz, R. E. Sturgeon and S. S. Berman 209 *In situ* hydride generation preconcentration of arsenic in a graphite furnace with sample vaporization into a microwave induced plasma for emission spectrometry

Letter to the Editor

T. M. Meadows and H. B. Fannin 215 An alternative distribution function for electrons in inductively coupled plasmas

Book Review

219 *Applications of Inductively Coupled Plasma Mass Spectrometry*, edited by A. R. Date and A. L. Gray

I *Software Survey Section*

i *New Patents*

iii *Aims and Scope*

No. 3

In this issue:

K. M. Attar and K. Alam 221 Spectral interferences on arsenic and mercury prominent emission lines in vacuum inductively coupled plasma–atomic emission spectrometry and use of methanol vapor as optical filter for spectral order sorting

Tutorial Review

J. A. M. van der Mullen and D. C. Schram 233 On the atomic state distribution function in inductively coupled plasmas—III. Rate coefficients and properties of atomic states

J. S. Crain, F. G. Smith and R. S. Houk 249 Mass spectrometric measurement of ionization temperature in an inductively coupled plasma

C. A. Monnig, B. D. Gebhart, K. A. Marshall and G. M. Hieftje 261 Tomographic image reconstruction techniques for spectroscopic sources—II. Instrumentation

T. D. Hettipathirana, A. P. Wade and M. W. Blades 271 Effects of organic acids in low power inductively coupled argon plasma–optical emission spectroscopy

J. J. Schwab and R. J. Lovett 281 Graphite furnace atomic emission spectrometry: computer simulations

Gy. Heltai, J. A. C. Broekaert, F. Leis and G. Tölg 301 Study of a toroidal argon and a cylindrical helium microwave induced plasma for analytical atomic emission spectrometry—I. Configurations and spectroscopic properties

E. H. van Veen and M. T. C. de Loos-Vollebregt 313 Kalman filtering of data from overlapping lines in inductively coupled plasma–atomic emission spectrometry

G. P. Miller 329 A theoretical evaluation of the relaxation method in determining the temperature ratio T_e/T_g in an inductively coupled plasma

Young-Sang Kim, Hiroshi Kawaguchi, Tomokazu Tanaka and Atsushi Mizuike 333 Non-spectroscopic matrix interferences in inductively coupled plasma–mass spectrometry

S. Greenfield, T. M. Durrani, J. F. Tyson and C. A. Watson 341 A comparison of boosted-discharge hollow cathode lamps and an inductively coupled plasma (ICP) as excitation sources in ICP atomic fluorescence spectrometry

Technical Note

P. E. Walters 351 Mechanical conversion of Ebert-type direct reading spectrometers

Announcement

357 Fifth International Symposium on Resonance Ionisation Spectroscopy

I *Software Survey Section*

i *New Patents*

iii *Aims and Scope*

No. 4/5

In this issue:

A. S. Al-Ammar, H. A. Hamid and B. H. Rashid	359	Elimination of interferences and effects from drift in working parameters in inductively coupled plasma atomic emission spectrometry by using a combination of the generalized standard addition method and the generalized internal reference method
B. Welz, G. Schlemmer, H. M. Ortner and W. Birzer	367	Scanning electron microscopy studies on surfaces from electrothermal atomic absorption spectrometry—V. Glassy carbon tubes
G. C. Turk and J. C. Travis	409	***Topics in Laser Spectroscopy:*** Simultaneous detection of laser-enhanced ionization and laser-induced fluorescence in flames: noise correlation studies
T. C. Kotze and P. van der Westhuizen	421	Beam-foil study of the $3p\ ^5S^0_2$ and $3p\ ^5P^0_{1,2,3}$ energy level lifetimes in O III
Y. Iida	427	Laser vaporization of solid samples into a hollow-cathode discharge for atomic emission spectrometry
D. R. Qiu, C. Vandecasteele, K. Vermeiren and R. Dams	439	Continuous hydride generation inductively coupled plasma atomic emission spectrometry for tin: optimization of working parameters and an approach to clarifying the mechanism of stannane generation
H. B. Lim and R. S. Houk	453	Langmuir probe measurement of electron temperature in a supersonic jet extracted from an inductively coupled plasma
J. Kawai, E. Nakamura, Y. Nihei, K. Fujisawa and Y. Gohshi	463	Sc $K\alpha$ and $K\beta$ X-ray fluorescence spectra
D. C. Baxter and J. Öhman	481	Multi-component standard additions and partial least squares modelling—a multivariate calibration approach to the resolution of spectral interferences in graphite furnace atomic absorption spectrometry
D. L. Smith, D. C. Liang, D. Steel and M. W. Blades	493	Analytical characteristics of furnace atomization plasma excitation spectrometry (FAPES)
G. H. Vickers, D. A. Wilson and G. M. Hieftje	499	Spatial dependence of ion concentrations in inductively coupled plasma mass spectrometry

M. Huang, P. Y. Yang, D. S. Hanselman, C. A. Monnig and G. M. Hieftje 511 Verification of a Maxwellian electron-energy distribution in the ICP

Research Note

C. Gorse, S. De Benedictis, G. Dilecce and M. Capitelli 521 Electron energy distribution functions in He/N_2 mixtures in the presence of metastable states

Analytical Note

Shen Kay Luo and Fu Chung Chang 527 Determination of trace elements in zirconium base alloy by inductively coupled plasma mass spectrometry

I *Software Survey Section*

IV *Aims and Scope*

No. 6

In this issue:

i ACS Division of Analytical Chemistry Award in Spectrochemical Analysis to Paul Boumans

A. Quentmeier, W. Sdorra and K. Niemax 537 ***Topics in Laser Spectroscopy:*** Internal standardization in laser induced fluorescence spectrometry of microplasmas produced by laser ablation of solid samples

C. Bendicho and M. T. C. de Loos-Vollebregt 547 Investigations of the carbothermal reduction mechanism of aluminum oxide in graphite furnace–atomic absorption spectrometry

O. Axner 561 ***Topics in Laser Spectroscopy:*** Determination of optimum conditions for laser-enhanced ionization spectrometry in flames—I. One-step signal strength versus excitation transition

R. Tsukahara and M. Kubota 581 Studies with desolvation in inductively coupled plasma–mass spectrometry

A. Canals, V. Hernandis and R. F. Browner 591 Evolution of drop size distributions for pneumatically generated aerosols in inductively coupled plasma–atomic emission spectrometry

A. Montaser, Izumi Ishii, B. A. Palmer and L. R. Layman 603 Line widths and temperatures of $Ar–N_2$ ICP discharges measured by high-resolution Fourier transform spectrometry

Analytical Note

R. A. Łukaszew — 613 Determination of rare earth elements in a glass matrix by spark source mass spectrometry

Technical Note

D. G. J. Weir and M. W. Blades — 615 An electronic device for control of solvent-plasma load for inductively coupled plasma spectroscopy

Announcements

619 ISAS 1991 European Winter Conference on Plasma Spectrochemistry

619 Third International Congress on Trace Elements in Medicine and Biology

I *Software Survey Section*

V *Aims and Scope*

No. 7

In this issue:

H. A. Phillips, M. B. Denton, K. Rozsa and P. Apai — 621 Absorption and emission of copper radiation in a low and a high voltage internal anode hollow cathode discharge

B. V. L'vov — 633 Recent advances in absolute analysis by graphite furnace atomic absorption spectrometry

P. Gadow — 657 Spektralanalytische Einschätzung eines rotierenden Gleichstrombogens mit homogenem Magnetfeld und Rohranode mit separatem Probenbecher

Xuan Weikang and Li Jigui — 669 The effects of Ni and Fe nitrate and nitric acid on the atomization of Ge in graphite furnace atomic absorption spectrometry

C. Bendicho and M. T. C. de Loos-Vollebregt — 679 The influence of pyrolysis and matrix modifiers for analysis of glass materials by GFAAS using slurry sample introduction

C. Bendicho and M. T. C. de Loos-Vollebregt — 695 Metal extraction by hydrofluoric acid from slurries of glass materials in graphite furnace atomic absorption spectrometry

T. Okura, H. Inoue, T. Kanazawa, S. Endo, S. Fukushima and Y. Gohshi — 711 Molecular orbital calculation of Si$K\alpha$ chemical shift due to coordination in silicates and silico-phosphates

S. M. Hassan and N. T. Loux	719	Elimination of spectral interferences in inductively coupled plasma–atomic emission spectroscopy using orthogonal polynomials
J. W. Olesik and S.-J. Den	731	Effect of central gas flow rate and water on an argon inductively coupled plasma: spatially resolved emission, ion–atom intensity ratios and electron number densities
Vahid Majidi and J. A. Holcombe	753	Error analysis for sampling of slurries: sedimentation errors
G. Hermann, M. Jung, G. Lasnitschka, R. Moder, A. Scharmann and X. Zhou	763	Multielement determination on strong and weak lines by coherent forward scattering spectroscopy with continuum sources
J. A. C. Broekaert, K. R. Brushwyler, C. A. Monnig and G. M. Hieftje	769	Fourier transform–atomic emission spectrometry with a Grimm-type glow-discharge source
R. Tsukahara and M. Kubota	779	Some characteristics of inductively coupled plasma–mass spectrometry with sample introduction by tungsten furnace electrothermal vaporization
A. Gleizes, A. A. M. Habib, M. Razafinimanana, M. Sabsabi and S. Vacquié	789	Departures from Saha equilibrium in SF_6 arc plasmas
P. W. J. M. Boumans	799	***Views and Criticisms:*** Signal-to-background, signal-to-noise, and signal-to-noise—An appraisal of a few detection limits reported in inductively coupled plasma emission spectrometry
I. Roelandts	815	***News on Reference Materials:*** Reference materials in ferrous metallurgy
A. Scheeline	839	News on Fundamental Reference Data
	841	*Erratum*
	I	*Software Survey Section*
	V	*Aims and Scope*
	IX	*Manuscript Requirements*

No. 8

In this issue:

Announcement

843 *Spectrochimica Acta* Special Golden Jubilee Supplement

Instrument Column

J. A. C. Broekaert 845 Atomic absorption spectroscopy instrumentation

Gy. Heltai, J. A. C. Broekaert, P. Burba, F. Leis, P. Tschöpel and G. Tölg 857 Study of a toroidal argon MIP and a cylindrical helium MIP for atomic emission spectrometry—II. Combination with graphite furnace vaporization and use for analysis of biological samples

W. Frech and D. C. Baxter 867 Temperature dependence of atomization efficiencies in graphite furnaces

M. P. Goudzwaard and M. T. C. de Loos-Vollebregt 887 Characterization of noise in inductively coupled plasma–atomic emission spectrometry

R. Irwin, A. Mikkelsen, R. G. Michel, J. P. Dougherty and F. R. Preli 903 Direct solid sampling of nickel based alloys by graphite furnace atomic absorption spectrometry with aqueous calibration

W. Sdorra and K. Niemax 917 ***Topics in Laser Spectroscopy***: Temporal and spatial distribution of analyte atoms and ions in microplasmas produced by laser ablation of solid samples

J. J. Tiggelman, F. J. Oukes and M. T. C. de Loos-Vollebregt 927 Signal compensation for the inductively coupled plasma–atomic emission spectrometry analysis of high-solid solutions

K. Nimalasiri De Silva and R. Guevremont 933 Statistical considerations for the direct introduction of particulate samples for plasma emission and plasma source mass spectrometry

W. Vieth and J. C. Huneke 941 Studies on ion formation in a glow discharge mass spectrometry ion source

Research Note

R. M. Barnes and Pengyuan Yang 951 Effect of coil configuration on simulation of an inductively coupled plasma discharge

Analytical Note

R. J. Watling, L. O'Neill and J. Haines 955 On-line ionization suppression in organic solutions using a non-miscible aqueous suppressant and flame atomic absorption analysis

Technical Note

G. A. Petrucci and J. C. Van Loon 959 Studies of ultrasonic nebulizer parameters in search of a simple, reliable system

A. Scheeline 969 News on Fundamental Reference Data

Announcement
971 Analytiktreffen 1990

I *Software Survey Section*

V *New Patents*

VII *Aims and Scope*

No. 9

In this issue:
P. W. J. M. Boumans — 973 Editorial: Pergamon/*Spectrochimica Acta* Atomic Spectroscopy Award 1989

J. W. Olesik — 975 Spatially and temporally resolved emission and fluorescence in a power modulated inductively coupled plasma

K. Nimalasiri De Silva and R. Guevremont — 997 A fluidized-bed powder sampler for inductively coupled plasma emission: hardware design, performance evaluation with geological reference materials

K. Nimalasiri De Silva and R. Guevremont — 1013 The direct introduction of powders for plasma emission with fluidized-bed and slurry nebulization methods: particle flow rate and analyte heterogeneity

J. B. Simeonsson, N. L. Ayala, J. A. Vera, B. W. Smith and J. D. Winefordner — 1025 Resonance line lasers as excitation sources for atomic fluorescence spectrometry

T. J. Manning, J. D. Winefordner, B. A. Palmer and D. E. Hof — 1031 Observation of line shifts and line profiles in an inductively coupled argon plasma

R. Klockenkämper, M. Becker and H. Otto — 1043 Röntgenspektralanalyse von echten und gefälschten Reichsgoldmünzen

Duencheng Fang and R. K. Marcus — 1053 Use of a cylindrical Langmuir probe for the characterization of charged particle populations in a planar, diode glow discharge device

Zhao Tai, Li Jiaxi, Yang Xiaotao, Deng Yicheng and Guo Tiezheng — 1075 The application of Voigt effect coherent forward scattering spectroscopy to determine trace amounts of gold

Research Notes
B. W. Smith, P. B. Farnsworth and N. Omenetto — 1085 Study of weak forbidden transitions by means of laser enhanced ionisation spectroscopy in the air–acetylene flame

J. W. McLaren, J. W. Lam and A. Gustavsson 1091 Evaluation of a membrane interface sample introduction system for inductively coupled plasma mass spectrometry

Announcement

1095 FACSS XVII

I *Software Survey Section*

IV *Aims and Scope*

No. 10

In this issue:

A. Scheeline 1099 News on Fundamental Reference Data

P. W. J. M. Boumans 1101 News on Fundamental Reference Data—News from the Editor-in-Chief

A. Gustavsson and P. Hietala 1103 A membrane interface for aqueous sample introduction into inductively coupled plasmas

E. H. van Veen, F. J. Oukes and M. T. C. de Loos-Vollebregt 1109 Some spectral interference studies using Kalman filtering inductively coupled plasma–atomic emission spectrometry

P. W. J. M. Boumans 1121 ***Views and Criticisms***: Line interference, line selection, and true detection limit in inductively coupled plasma emission spectrometry

B. Magyar, K. Ikrényi and E. Bertalan 1139 Standardless flame atomic absorption spectrometry: problems involved in the determination of aluminium

P. B. Farnsworth, B. W. Smith and N. Omenetto 1151 Computer modeling of collection efficiency of laser excited fluorescence from a graphite furnace

J. M. Goldberg and K. P. Carney 1167 Electrical characteristics of imploding thin film plasma atom cells

J. M. Goldberg and K. P. Carney 1177 Mass-flow characteristics of imploding thin film plasma atom cells

Communication

B. Heßling and K. Niemax 1187 ***Topics in Laser Spectroscopy***: An improved optical-filter-wavemeter for semiconductor diode laser spectrometers

1193 Corrigendum

I *Software Survey Section*

V *Aims and Scope*

No. 11

In this issue:

M. Marichy, M. Mermet and J. M. Mermet — 1195 Some effects of low acid concentrations in inductively coupled plasma atomic emission spectrometry

K. P. Schmidt, H. Becker-Ross and S. Florek — 1203 A combination of a pulsed continuum light source, a high resolution spectrometer, and a charge coupled device detector for multi-element atomic absorption spectrometry

D. Slinkman, F. Braid and R. Sacks — 1211 Magnetic-field modulation of a two-electrode direct-current plasma

H. Bedenbender, G. Hermann and A. Scharmann — 1225 Noise characteristics of a flame CFS spectrometer with a continuum source

B. Welz, M. Schubert-Jacobs, M. Sperling, D. L. Styris and D. A. Redfield — 1235 Investigation of reactions and atomization of arsine in a heated quartz tube using atomic absorption and mass spectrometry

R. W. Fonseca, O. A. Güell and J. A. Holcombe — 1257 Electrothermal atomization of copper from graphite and tantalum surfaces

W. W. van Berkel, J. Balke and F. J. M. J. Maessen — 1265 Introduction of analyte-loaded poly(dithiocarbamate) into inductively coupled argon plasmas by electrothermal vaporization. Spatial emission characteristics of the resulting dry plasmas

I. Roelandts — 1275 ***News on Reference Materials:*** Soviet reference materials for ferrous metallurgy

Announcement

1279 Bioelements: Health Aspects. Special Issue of the *Annali dell'Istituto Superiore di Sanità*

I *Software Survey Section*

V *New Patents*

VII *Aims and Scope*

No. 12

In this issue:

L. M. Kagan — 1281 Calculation of parameters of combined electrical discharges—I. Model of constant equivalent gap voltage

M. A. Vaughan and G. Horlick — 1289 Effect of sampler and skimmer orifice size on analyte and analyte oxide signals in inductively coupled plasma–mass spectrometry

M. A. Vaughan and G. Horlick 1301 Ion trajectories through the input ion optics of an inductively coupled plasma–mass spectrometer

J. W. H. Lam and G. Horlick 1313 A comparison of argon and mixed gas plasmas for inductively coupled plasma–mass spectrometry

J. W. H. Lam and G. Horlick 1327 Effects of sampler-skimmer separation in inductively coupled plasma–mass spectrometry

M. Huang, D. S. Hanselman, Q. Jin and G. M. Hieftje 1339 Non-thermal features of atmospheric-pressure argon and helium microwave-induced plasmas observed by laser-light Thomson scattering and Rayleigh scattering

Yasuo Iida 1353 Effects of atmosphere on laser vaporization and excitation processes of solid samples

Analytical Note

B. W. Smith, P. B. Farnsworth, P. Cavalli and N. Omenetto 1369 Optimization of laser excited atomic fluorescence in a graphite furnace for the determination of thallium

I *Software Survey Section*

V *Volume Contents and Author Index*

XXI *Aims and Scope*